Amendments to the Specification

Please replace lines 8-18 on page 41 of the application with the following:

VYBRANT staining of cells

One day prior to coating the cells with PPG, the cells were incubated in 10μM carboxyfluorescein diacetate succinimidyl ester (CFDA SE) sold under the trademark VYBRANT (Molecular Probes, Eugene, OR) in Hank's balanced salt solution for 15 minutes at 37° C in 5% CO_2 /95% air after which they were washed once with Hank's balanced salt solution and fresh medium was added. This vital staining of cells is based on the passive diffusion of a colorless, nonfluorescent CFDA SE into cells. Once in the cell, the CFDA SE is cleaved by intracellular esterases to yield a highly fluorescent dye which is retained in some cells for a number of weeks. Staining of the cells was verified by fluorescent microscopy after trypsinization of the cells and before the PPG coating procedure.

Please replace lines 20-31 on page 41 of the application with the following:

Frozen Sections

5-8 µm frozen sections of rabbit articular cartilage were cut and placed onto 3-amino propyltriethoxysilane coated slides (Sigma) and stored at -20°C until use. When tested the slides were first hydrated in PBS for 30 minutes. Half the sections were incubated in chondroitinase ABC (0.1 U/ml) for 15 minutes, and all sections were then blocked with 1% BSA/PBS for 5 minutes. Next, the sections were incubated for 45 minutes with 30 µl of 10 X 10^6 VYBRANT stained cells in PBS coated with different antibodies (or PPG as a negative control). After the incubation time the sections are gently and meticulously washed with PBS for 5 minutes, suspended for 30 seconds in 5 µg/ml propidium iodine, washed again, and cover-slipped with 1 mg/ml p-phenylendiamine in 45% glycerol in 1 N sodium phosphate, pH 8.5. The slides were analyzed using fluorescent microscopy.

Please replace lines 1-17 on page 42 of the application with the following:

Osteo-Chondral explants

Osteo-Chondral explants were harvested from 1-year-old male New Zealand white rabbits after they were sacrificed by intra-venous phenobarbital overdose (2,600 mg/kg; FETAL-PLUS, Vortex Pharmaceuticals, Dearborn, MI). The distal femoral condyles were sterilely harvested and 4.25 mm diameter trephine is used to manually harvest 3-4 osteo-chondral cylinders from every femur. A standard defect is then created by sliding a 1 mm diameter ring curette along the cartilage surface, this is performed taking care as to not penetrate the subchondral bone. These explants were incubated in a 96-well plate with the cartilage side facing up and the different VYBRANT stained cells (1.5×10^6 cells/well) coated with the different antibodies are applied to the well on top of the explants and incubated for 45 minutes at 37°C in 5% CO_2 /95% air. Following this incubation, the explants were turned cartilage side facing down into empty wells filled with DMEM. Using a conical insert, the cartilage is kept above the bottom of the well thus allowing gravity to affect the attached cells. This incubation was carried out for 12 hours. The explants are then harvested, fixed in 10% neutral buffered formalin, decalcified, embedded, and analyzed by fluorescent microscopy.

Please replace lines 27-32 on page 43 of the application with the following:

Targeting Frozen Sections

The chondrocytes were first incubated in a vital dye, VYBRANT, which is metabolized into the fluorescent molecule only by living cells. Once the cells were stained they were coated with PPG and a second layer of matrix specific antibodies. Fluorescent micrographs showed that cells coated with specific matrix antibodies are found in greater density on the sections than in controls (Figure 5).

Please replace lines 2-12 on page 44 of the application with the following:

Osteo-chondral explants

To test the ability of antibody-coated cells to preferentially bind to cartilage matrix, VYBRANT labeled cells were used in order to assess the targeting potential of our antibody coated cells. A system was developed to allow us to create a standard articular defect in an osteochondral explant. Fluorescent micrograph revealed greater number of cells preferentially inside the defect than on the native cartilage surface when specific antibodies were used and a different morphology of the cells inside the defect. Cells that adhered inside the defect without specific antibody coating had a flattened appearance while specifically targeted cells seem to be round and clumped in groups. It also appears that combining the different antibodies together in the coating of cells has an additive effect (Figures 6, 7 and 8).